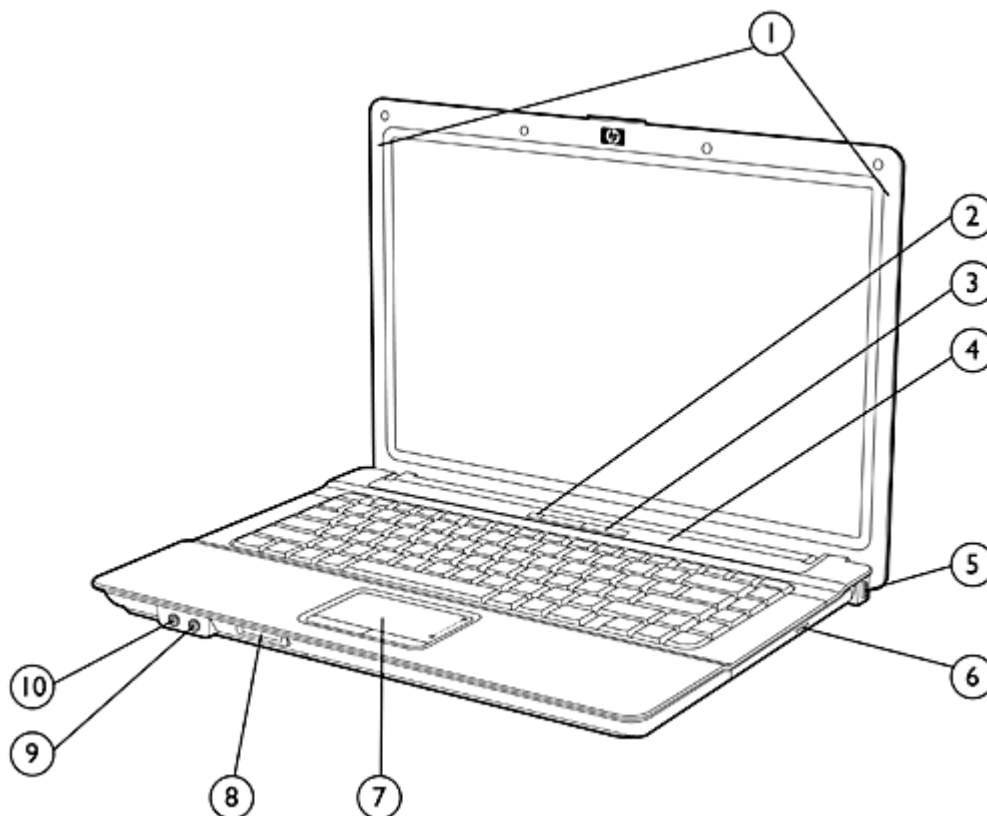


## Overview

HP recommends Windows Vista® Business

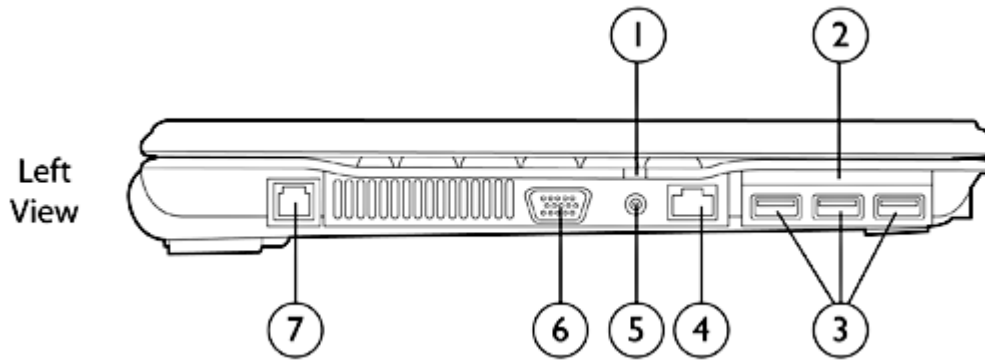


- 1. Dual-band wireless LAN antennas\*
- 2. Wireless On/Off button with LED\*
- 3. Power button with LED
- 4. Speaker
- 5. Kensington Lock slot

- 6. Optical drive
- 7. Touchpad with scroll zone
- 8. Secure Digital (SD) slot
- 9. Stereo microphone in
- 10. Stereo headphone/line out

\* Select models only

## Overview



- |                         |                                   |
|-------------------------|-----------------------------------|
| 1. Battery charging LED | 5. Power connector                |
| 2. ExpressCard/54 slot  | 6. VGA/external monitor connector |
| 3. Three USB 2.0 ports  | 7. RJ-11/modem port               |
| 4. RJ-45/Ethernet port  |                                   |

## At A Glance

- Genuine Windows Vista Home Basic 32  
Genuine Windows Vista Business with Genuine Windows XP Professional custom preinstalled
- Intel® Core™ 2 Duo processor or Intel Celeron® processor
- Sleek industrial design starting at 5.5 lb/2.49 kg and 1.27 inch/32.3 mm thin at front
- Widescreen 15.4-inch diagonal display
- Mobile Intel GME965 Express Chipset or Mobile Intel GLE960 Express Chipset
- Supports up to 4 GB of 667 MHz DDR2 SDRAM
- 160 GB 5400 rpm SATA hard drive with HP Drive Guard
- Intel Graphics Media Accelerator X3100, with up to 384 MB shared system memory
- Integrated 802.11 a/b/g, or b/g wireless LAN module\*
- Bluetooth® 2.0\*
- Intel 82562GT 10/100 Network Connection
- Touchpad with scroll zone

\* Select models only

## Standard Features

<b>Processors</b>	<p>Intel Core 2 Duo Processor T5670 (1.80 GHz, 2 MB L2 cache, 800 MHz FSB)*</p> <p>Intel Celeron Processor 550 (2.0 GHz, 1 MB L2 cache, 533 MHz FSB)*</p> <p>* Intel's numbering is not a measurement of higher performance.</p> <p><b>NOTE:</b> Processor speed denotes maximum performance mode; processors will run at lower speeds in battery optimization mode.</p>	
<b>Operating System</b>	<b>Preinstalled</b>	<p>Genuine Windows Vista Business 32 with Genuine Windows XP Professional custom preinstalled*†</p> <p>Genuine Windows Vista Home Basic 32*</p>
	<b>Supported</b>	Genuine Windows XP Professional
	<b>Certified</b>	SUSE Linux Enterprise Desktop 10
	<p>* Certain Windows Vista product features require advanced or additional hardware. See: <a href="http://www.microsoft.com/windowsvista/getready/hardwarereqs.mspx">http://www.microsoft.com/windowsvista/getready/hardwarereqs.mspx</a> and <a href="http://www.microsoft.com/windowsvista/getready/capable.mspx">http://www.microsoft.com/windowsvista/getready/capable.mspx</a> for details. Windows Vista Upgrade Advisor can help you determine which features of Windows Vista will run on your computer. To download the tool, visit: <a href="http://www.windowsvista.com/upgradeadvisor">http://www.windowsvista.com/upgradeadvisor</a>.</p> <p>† This Windows Vista Business licensed product will ship to you with Genuine Windows XP Professional custom installed on the hard drive. Customers buying these downgraded systems are expected to purchase at least 25 licenses annually.</p>	
<b>Chipset</b>	Mobile Intel GME965 or GLE960 Express Chipset	
<b>Graphics</b>	<p>Mobile Intel Graphics Media Accelerator X3100, up to 384-MB shared system memory</p> <p>Microsoft DirectX 9 capable</p>	
<b>Display</b>	<b>Internal</b>	15.4-inch diagonal WXGA BrightView (1280 x 800 resolution)
	<b>External</b>	<p>Up to 32-bit per pixel color depth</p> <p>VGA port supports resolutions up to 2048 x 1536 at 75 Hz, and lower resolutions at up to 100 Hz</p> <p><b>NOTE:</b> Resolutions are dependent upon monitor capability, and resolution and color depth settings.</p>
<b>Memory</b>	<b>Standard</b>	<p>1024-MB, 2048-MB, or 4096-MB* 667-MHz DDR2 SDRAM total memory; two SODIMM slots supporting dual channel memory</p>
	<b>Dual-channel</b>	<p>Maximized dual-channel performance requires SODIMMs of the same size and speed in both memory slots.</p>
	<p>* with Mobile Intel GME965 chipset only</p> <p><b>NOTE:</b> Due to the non-industry standard nature of some third-party memory modules, we recommend HP branded memory to ensure compatibility. If you mix memory speeds, the system will perform at the lower memory speed.</p>	

## Standard Features

### Communications

Intel Fast Ethernet Integrated Controller (10/100 NIC)  
56K V.92 modem\*

\* Designed for downloads from 56K modem compliant sources. Maximum achievable download transmission rates currently do not reach 56 KB/s, and will vary with line conditions. Modem availability is subject to country regulatory approval.

### Wireless Devices

Support for a broad range of secure, integrated wireless LAN options featuring support for the latest industry standards. Integrated Bluetooth is also available (factory configurable only) and can be combined with any of the supported wireless LAN options.

#### All 802.11 integrated wireless LAN options

Wi-Fi CERTIFIED

Cisco Compatible Extensions support (Version 4.0) with Microsoft Windows XP

Wired Equivalent Privacy (WEP) support up to 128-bit keys

Wi-Fi Protected Access (WPA) and WPA2 support

802.1x authentication support, including EAP-TLS, EAP-TTLS, PEAP-GTC, PEAP-MSCHAPv2, and LEAP

Advanced Encryption Standard (AES) support

Dual antennas integrated in the display enclosure

#### Intel PRO/Wireless 3945ABG Network Connection\*

Integrated support for 802.11 a, b and g

Up to 54 mbps data rate

#### Broadcom 4312BG 802.11b/g WiFi Adapter

Integrated support for 802.11 b and g

Up to 54 mbps data rate

#### HP Integrated Module with Bluetooth Wireless Technology

Bluetooth Specification v2.0 compliant

Works with a wide range of Bluetooth devices

\* Requires Intel Core 2 Duo processor

### Keyboard

The 101/102-key compatible keyboard features an industry standard, full-pitch key layout with desktop keyboard features, such as the isolated inverted-T cursor control keys, editing keys, both left and right control and alt keys, and 12 function keys. International key layouts are available. Other features include an integrated numeric keypad, hotkeys for instant access to power conservation, brightness, and other features, 19 mm x 19 mm key pitch (center-to-center spacing), 2.5 mm stroke, comfort-dished keycaps, and bright key legends for improved visibility in low light conditions.

### Pointing device

Touchpad with scroll zone, two pick buttons

### Expansion Card Slots

#### ExpressCard/54 slot

Supports ExpressCard/54 and ExpressCard/34

### Standard Features

Storage	Hard drives	160-GB 5400 rpm SMART SATA
	<b>NOTE:</b> These hard drives are customer removable and will withstand multiple insertion/removal cycles. Up to 10 GB is reserved for the system recovery software.	
	HP DriveGuard	The hard drive is mounted directly to the notebook frame, reducing the transmission of shock to the hard drive.
	Fixed optical drives	DVD+/-RW SuperMulti DL LightScribe Drive
Interfaces	ExpressCard/54 slot	Supports ExpressCard/54 and ExpressCard/34
	External Monitor	One – VGA
	External Microphone	One
	Headphone/Line out	One
	Power Connector	One
	RJ-11 (Modem)	One
	RJ-45 (NIC)	One
	USB 2.0	Three
Audio	LED Status Indicators	Five
	High Definition Audio support	
	Integrated mono speaker	
	Stereo headphone/line out	
	Stereo microphone in	
Software	Preinstalled Software with Windows Vista	Adobe Acrobat Reader HP Recovery Manager HP Help and Support Center Roxio Creator Basic 10.1 Synaptics Touchpad Driver McAfee Total Protection* Intervideo WinDVD 8SE- DVD Player
		* 60 day trial period for McAfee Total Protection for Small Business software. Internet access required to receive updates. First update included. Subscription required for updates thereafter.
HP Recovery Manager	Each unit is shipped with HP Recovery Manager. HP Recovery Manager enables fast recovery of the factory preinstalled image if the system becomes corrupted or if important system files are accidentally deleted. Up to 10 GB of the hard drive is reserved for the system recovery software.	
SMBIOS Version 2.4	System Management BIOS, previously known as DMI BIOS, is used to store system management information.	

### Standard Features

#### Security

#### Standard Features

Configuration Control Hardware  
Memory Change Alert  
Ownership Tag  
Setup Password  
Power-On Password  
DriveLock  
Kensington Lock Slot

For more information on HP security solutions refer to: <http://www.hp.com/go/security>.

#### Power Supply

External 65-watt AC adapter, 6-foot (1.8-meter) power cord included.  
Total length including External AC adapter is 12 feet (3.66 meter).  
HP Fast Charge\*

\* Fast Charge recharges your battery up to 90% within 90 minutes when the system is off.

#### Battery

6-cell (47 WHr) high capacity Lithium-Ion

#### Battery Life

Up to 3 hours and 45 minutes

#### Power Conservation

Hibernation  
Standby  
ACPI compliance

#### Service and Support

HP Services offers limited 1-year warranty options depending on country;  
1-year limited warranty on primary battery. On-site service and warranty upgrades are also available.  
HP Care Pack Services extend service contracts beyond the standard warranties. To choose the right level of service for your HP product, use the HP Care Pack Services Lookup Tool at:  
<http://www.hp.com/go/lookuptool>. Additional HP Care Pack Services information by product is available at: <http://www.hp.com/hps/carepack>.

**NOTE:** Certain restrictions and exclusions apply. Consult the HP Customer Support Center for details.  
<http://h20000.www2.hp.com/bizsupport/TechSupport/ProductRoot.jsp>

#### Select Model(s)

### Standard Features

**HP 550**  
KS158UT#ABA  
Smart Buy

<b>Processor</b>	Intel Celeron Processor 550 (2.0 GHz, 1 MB L2 cache, 533 MHz FSB)
<b>Operating System</b>	Genuine Windows Vista Home Basic 32
<b>Chipset</b>	Mobile Intel GLE960 Express Chipset
<b>System Memory</b>	1024-MB 667-MHz DDR2 SDRAM (1 DIMM) Memory operates at a maximum of 533-MHz with Celeron processor
<b>Hard Drive</b>	160-GB 5400 rpm SATA HDD
<b>Display</b>	15.4-inch diagonal WXGA BrightView (1280 x 800 resolution)
<b>Graphics</b>	Mobile Intel Graphics Media Accelerator X3100, up to 384-MB shared system memory
<b>Communications</b>	Marvell Ethernet (10/100 NIC) 56K V.92 modem
<b>Integrated Wireless</b>	Broadcom 4312G 802.11b/g WiFi Adapter
<b>Pointing Device</b>	Touchpad with scroll zone, two pick buttons
<b>Optical Drive</b>	DVD+/-RW SuperMulti DL LightScribe Drive
<b>Battery</b>	6-cell (47 WHr) Lithium-Ion
<b>Power</b>	External 65-watt AC adapter
<b>Warranty</b>	1 Year Limited Warranty

**HP 550**  
KS159UT#ABA  
Smart Buy

<b>Processor</b>	Intel Core 2 Duo Processor T5670 (1.8 GHz, 2 MB L2 cache, 800 MHz FSB)
<b>Operating System</b>	Genuine Windows Vista Business 32 with downgrade to Windows XP Professional custom installed
<b>Chipset</b>	Mobile Intel GME965 Express Chipset
<b>System Memory</b>	2048-MB 800-MHz DDR2 SDRAM (1 DIMM)
<b>Hard Drive</b>	160-GB 5400 rpm SATA HDD
<b>Display</b>	15.4-inch diagonal WXGA BrightView (1280 x 800 resolution)
<b>Graphics</b>	Mobile Intel Graphics Media Accelerator X3100, up to 384-MB shared system memory
<b>Communications</b>	Marvell Ethernet (10/100 NIC) 56K V.92 modem
<b>Integrated Wireless</b>	Intel PRO/Wireless 3945ABG Network Connection*
<b>Pointing Device</b>	Touchpad with scroll zone, two pick buttons
<b>Optical Drive</b>	DVD+/-RW SuperMulti DL LightScribe Drive
<b>Battery</b>	6-cell (47 WHr) Lithium-Ion
<b>Power</b>	External 65-watt AC adapter
<b>Warranty</b>	1 Year Limited Warranty

\* Requires Intel Core 2 Duo processor

### Standard Features

HP 550  
KS164UA#ABA

Processor	Intel Core 2 Duo Processor T5670 (1.8 GHz, 2 MB L2 cache, 800 MHz FSB)
Operating System	Genuine Windows Vista Business 32 with downgrade to Windows XP Professional custom installed
Chipset	Mobile Intel GME965 Express Chipset
System Memory	2048-MB 800-MHz DDR2 SDRAM (1 DIMM)
Hard Drive	160-GB 5400 rpm SATA HDD
Display	15.4-inch diagonal WXGA BrightView (1280 x 800 resolution)
Graphics	Mobile Intel Graphics Media Accelerator X3100, up to 384-MB shared system memory
Communications	Marvell Ethernet (10/100 NIC) 56K V.92 modem
Integrated Wireless	Intel PRO/Wireless 3945ABG Network Connection*, HP Integrated Module with Bluetooth Wireless Technology
Pointing Device	Touchpad with scroll zone, two pick buttons
Optical Drive	DVD+/-RW SuperMulti DL LightScribe Drive
Battery	6-cell (47 WHr) Lithium-Ion
Power	External 65-watt AC adapter
Warranty	1 Year Limited Warranty

\* Requires Intel Core 2 Duo processor



### Options

Memory	1 GB 667 MHz DDR2 SDRAM SODIMM*	EM994AA
	2 GB 667 MHz DDR2 SDRAM SODIMM*	EM995AA
	1 GB 800 MHz DDR2 SDRAM SODIMM*	KT292AA
	2 GB 800 MHz DDR2 SDRAM SODIMM*	KT293AA
* Models with Mobile Intel GLE960 Express Chipset use this memory at a maximum memory speed of 533 MHz. Models with Mobile Intel GME965 Express Chipset use 800 MHz memory modules at a maximum memory speed of 667 MHz.		
Other Storage	HP USB Diskette Drive	DC361B
	HP External MultiBay II	PA509A#ABA
	HP MultiBay II DVD-ROM Drive	PA849A
	HP MultiBay II DVD+/-RW SuperMulti DL Drive	PA851A
Power	65W Smart AC Adapter	ED494AA#ABA
	65W Air/Auto/AC Smart Combo Adapter	ED993AA#ABA
	90W Air/Auto/AC Smart Combo Adapter	AJ652AA#ABA
	Primary 6-cell battery	GJ655AA
Carrying Cases	HP Basic Carrying Case	AJ078AA
	HP Value Nylon Case	RR314AA
	HP Universal Nylon Case	RR315AA
	HP Executive Leather Case	RR316AA
	HP Deluxe Nylon Backpack	RR317AA
	HP Deluxe Roller Case	GD405AA
Security	ExpressCard Smart Card Reader with Java Card	AJ451AA
	HP Protectools Java Card – 10 units	EL348AA
	HP/Kensington Cable Lock	PC766A
Input/Output Devices	USB Keyboard & Mouse Bundle	RC465AA#ABA
	HP USB/PS2 Optical Scroll Mouse	DC369A
	HP USB Optical Travel Mouse	RH304AA

## Technical Specifications

System Unit	Dimensions (HxWxD)	1.27 (at front) x 14.1 x 10.5 in 32.3 (at front) x 358.0 x 266.8 mm
	Weight	Starting at 5.5 lb (2.49 kg)
<b>NOTE:</b> Height varies depending upon where on the notebook the measurement is made. Weight varies by configuration and components. Weight includes 6-cell battery, 80-GB hard drive, 512-MB memory, and optical drive. Weight varies by configuration and components.		
Stand-Alone Power Requirements	Normal Operating Voltage	18.5 V
	Average Operating Power	12.5 W
	Max Operating Power	< 65 W
Temperature	Operating	32° to 95° F (0° to 35° C) (not writing optical) 41° to 95° F (5° to 35° C) (writing optical)
	Non-operating	−4° to 140° F (−20° to 60° C)
Relative Humidity	Operating	10% to 90%, non-condensing
	Non-operating	5% to 95%, 101.6° F (38.7° C) maximum wet bulb temperature
Shock	Operating	125 G, 2 ms, half-sine
	Non-operating	200 G, 2 ms, half-sine
Random Vibration	Operating	0.75 grms
	Non-operating	1.50 grms
Altitude (unpressurized)	Operating	−50 to 10,000 ft (−15.24 to 3,048 m)
	Non-operating	−50 to 40,000 ft (−15.24 to 12,192 m)
Industry Standard Certifications	UL	Yes
	CSA	Yes
	FCC Compliance	Yes
	ENERGY STAR®	Yes*
	EPEAT	Gold**
	ICES	Yes
	Australia / NZ A-Tick Compliance	Yes
	CCC	Yes
	Japan VCCI Compliance	Yes
	MIC	Yes
	BSMI	Yes
	CE Marking Compliance	Yes
	BNCL or BELLIS	Yes
	CIT	Yes
	GOST	Yes
	Saudi Arabian Compliance (ICCP)	Yes
	SABS	Yes
	UKRSERTCOMPUTER	Yes

### Technical Specifications

\* Configurations of the HP 550 that are ENERGY STAR qualified are identified as HP 550 ENERGY STAR on HP websites and on [www.energystar.gov](http://www.energystar.gov).

\*\* EPEAT registration varies by country. See [www.epeat.net](http://www.epeat.net) for registration status by country. EPEAT status listed above applies to U.S.

65W AC Adapter	Dimensions	4.17 x 1.85 x 1.1 in (10.6 x 4.7 x 2.8 cm)	
	Weight	0.62 lb (280 g)	
	Input	100 to 240 VAC	
		Input Efficiency	83% min at 115 VAC
		Input frequency range	47 to 63 Hz
	Output	Input AC current	1.7 A at 90 VAC, 0.85 A at 180 VAC
		Output power 65W	65W
		DC output	18.5V
		Hold-up time	5 msec at 115 VAC input
		Output current limit	<5A, Over voltage protection- 29V max automatic shutdown
	Connector	3 pin/grounded, mates with interchangeable cords	
	Environmental Design	Operating temperature	32° to 104° F (0° to 40° C)
		Non-operating (storage) temperature	-4° to 149° F (-20° to 65° C)
		Altitude	0 to 10,000 ft (0 to 3,048 m)
		Humidity	20% to 80%
	EMI and Safety Certifications	Storage Humidity	10% to 90%
		CE Mark – full compliance with LVD and EMC directives; Worldwide safety standards – IEC950, EN60950, UL1950, Class2, SELV; Agency approvals – C-UL-US, NORDICS, DENAN, EN55022 Class B, FCC Class B, CISPR22 Class B, CCIB, NOM-1 NYCE; MTBF – over 200,000 hours at 25°C ambient condition.	

### Technical Specifications

6-Cell (47 WHr) Lithium-Ion battery	Dimensions (H x W x L)	0.8 x 2.1 x 8.0 in (2.0 x 5.3 x 20.3 cm)	
	Weight	0.690 lb (0.313 kg)	
	Cells/Type	6-cell Lithium-Ion	
	Energy	Watt-hour Capacity	47 WHr
	Temperature	Operating (Charging)	32° to 113° F (0° to 45° C)
		Operating (Discharging)	14° to 140° F (–10° to 60° C)
		Non-operating	–4° to 140° F (–20° to 60° C)
	Battery Re-Charge Time	System in OFF mode or Standby	2.5 hours
		System ON	3 to 5 hours (depending on system power consumption)
		HP Fast Charge	Charges the battery up to 90% within 90 minutes when system is OFF

15.4-inch Color TFT WXGA BrightView Display	Active Area (W x H)	13.0 x 8.1 in (33.1 x 20.7 cm)	
	Diagonal Size	15.4 in (39.1 cm)	
	Surface Treatment	BrightView	
	Contrast Ratio	300:1 (typical)	
	Refresh Rate	60 Hz	
	Brightness	200 nit (typical)	
	Pixel Resolution	Pitch	0.259 mm
		Format	1280 x 800
		Configuration	RGB stripe
	Backlight	CCFL	
	PPI	98	
	Viewing Angle	±30° Horizontal, ±10° Vertical (minimum) 30/30/20/10 (Left/Right/Down/Up) (minimum) or 45/45/35/25 (Left/Right/Down/Up) (typical)	

### Hard Drives

## Technical Specifications

160 GB 5400 rpm SATA	Drive Weight	0.22 lb (101 g)	
	Capacity	160 GB	
	Height	0.37 in (9.5 mm)	
	Width	2.75 in (70 mm)	
	Interface	ATA-7 / SATA 1.0a	
	Transfer Rate	Synchronous (maximum)	100 MB/s (Drive Capability)
	Seek Time (typical reads, including settling)	Single Track	3 ms
		Average	13 ms
		Maximum	24 ms
	Rotational Speed	5400 rpm	
	Logical Blocks	312,581,808	
	Operating Temperature	41° to 131° F (5° to 55° C)	
	Features	ATA Security	

## Removable Storage Drives – Fixed Bay

DVD+/-RW SuperMulti DL LightScribe Drive	Access Times	Random	<175 ms CD
			<230 ms DVD
	Max Data Transfer Rate	24X CD-ROM	3,600 KB/s
		8X DVD	10,800 KB/s
		24X CD-R	3,600 KB/s
		16X CD-RW	2,400 KB/s
		8X DVD+R	10,800 KB/s
		4X DVD+RW	5,400 KB/s
		8X DVD-R	10,800 KB/s
		4X DVD-RW	5,400 KB/s
		2.4X DVD+R(9)	2,700 KB/s
		5X DVD-RAM	6,750 KB/s
	Transfer Mode	Multiword DMA Mode	
	Interface	EIDE	
	Supported Media (read)	CD-DA, CD+(E)G, CD-MIDI, CD-TEXT, CD-ROM, CD-ROM XA, MIXED MODE CD, CD-I, CD-I Bridge (Photo-CD, Video CD), Multisession CD (Photo-CD, CD-EXTRA, Portfolio, CD-R, CD-RW), CD-R, CD-RW, DVD-ROM (DVD-5, DVD-9, DVD-10, DVD-18), DVD-R, DVD-RW, DVD+R, DVD+RW, DVD-RAM	
	Supported Media (write)	CD-R, CD-RW, DVD+R, DVD+RW, DVD-R, DVD-RW, DVD-RAM, LightScribe	
	Max Media Capacity (read)	8.5 GB	
	Max Media Capacity (write)	8.5 GB	
	Transport	Tray Loading	

## Technical Specifications

### Audio

Hardware	Implementation	ADI1981HD High Definition CODEC
	Full Duplex	Yes
	Sound Blaster Pro compatible	Yes
	Microphone Jack	Stereo
	Headphone/Line Out Jack	Stereo

Audio Output Quality	Frequency Response	20 Hz – 20 kHz
	Signal to Noise Ratio	>85 dB
	Total Harmonic Distortion	0.01%
	Noise Floor	–110 dB
	Play/Record Sampling Rate(s)	8 kHz – 48 kHz
	DAC	16, 20, or 24-bit
	ADC	16, or 20-bit

Internal Speaker	Power Rating	2.0 Watts
	Impedance	4 Ohms

### Communications

Intel 82562GT 10/100 Network Connection	Ethernet Features	10 Mbit/s operation (10BASE-T; IEEE 802.3i; IEEE 802.3 clauses 13-14)
		100 Mbit/s operation (100BASE-TX; IEEE 802.3u; IEEE 802.3 clauses 21-30)
		Auto-Negotiation (Automatic Speed and Duplex Selection)
		Full Duplex and Half Duplex operation at 10 and 100 Mbit/s
	Power Management	IEEE 802.3x Flow Control (IEEE 802.3 clauses 31-32; configurable)
		<b>NOTE:</b> Auto MDI/MDI-X is not supported.
		ACPI compliant -- multiple power modes
	Performance Features	TCP / IP / UDP Checksum Offload
	Manageability	Boot-from-LAN using PXE 2.1
		<b>NOTE:</b> Wake-on-LAN and Boot-from-LAN using RPL are not supported.
	NIC Device Driver Name	Intel 82562 Network Internet Connection
	Drivers Available	Windows Vista

## Technical Specifications

V.92 56K Data/Fax Modem	Form Factor	MDC 1.5 Daughtercard
	Power Management Support	APM Revision 1.2, ACPI
	Approvals/Certifications	UL, CSA, NEMKO, CCIB, Industry Canada, FCC Part 68, CTR21, FCC Part 15 Class B, Canadian ICES-003 Class B, C.I.S.P.R.22, Australian ACA, CE Mark, Other Countries
	Data Mode Capabilities	V.92 data V.8bis V.80 V.44, V.42bis, MNP5 (Compression) V.42 (LAPM, MNP2-4) (Error Correction) <b>Optional symbol rates:</b> 2800, 3429 Asymmetric Symbol rates <b>Synchronous primary channel data signaling rates:</b> 3600, 31200 Automatic rate re-negotiation V.34 V.32bis V.32 V.23 V.22bis V.22 V.21 Bell 212A Bell 103J
	Fax Mode Capabilities	TIA/EIA-578-B (Class 1) T.30, T.4 (Group 3) V.17 V.29 V.27ter V.21 Channel 2
	Command Set	V.250 (Partial) TIA-602 Identification: +GMI, +GMM, +GMR Port control: +IPR, +ICF, +IFC, +ILRR Modulation: +MS, +MR, +MA Error control: +ES, +ER, +EB, +ESR, +ETBM Data compression: +DS, +DR V.251

Intel PRO/Wireless 3945ABG Network Connection	Wireless LAN Standards	IEEE 802.11a IEEE 802.11b IEEE 802.11g
	Interoperability	Wi-Fi certified Cisco Compatible Extensions Program compliant with Microsoft Windows 2000 and XP (details at: <a href="http://www.hp.com/go/notebooks/WLAN">http://www.hp.com/go/notebooks/WLAN</a> )
	Frequency Band	2.4 GHz

## Technical Specifications

<b>Data Rates</b>	802.11b: 1, 2, 5.5, 11 Mbps 802.11g: 6, 9, 12, 18, 24, 36, 48, 54 Mbps
<b>Modulation</b>	Direct Sequence Spread Spectrum DBPSK, DQPSK, CCK, OFDM
<b>Security<sup>1</sup></b>	Supports 64- and 128-bit WEP, WPA, WPA2, hardware-accelerated AES, 802.1x authentication types EAP-TLS, EAP-TTLS, PEAP-GTC, PEAP-MSCHAPv2, LEAP, EAP-FAST, EAP-SIM.  Support for Cisco Security Features (proven compatibility with Cisco Aironet infrastructure products through the Cisco Compatible Extensions Program Version 4).
<b>Sub-channels</b>	Multinational support with frequency bands and channels compliant to local regulations.
<b>Media Access Protocol</b>	CSMA/CA (Collision Avoidance) with ACK
<b>Network Architecture Models</b>	Ad-hoc (Peer to Peer) Infrastructure (Access Point Required)
<b>Roaming</b>	IEEE 802.11 compliant roaming between access points
<b>Output Power (for CCK)<sup>2</sup></b>	15 dBm
<b>Output Power (for OFDM; power varies by data rate)<sup>2</sup></b>	15 dBm
<b>Power Consumption</b>	Transmit: 1.8 Watts (max) Receive: 1.4 Watts (max) Idle mode <sup>3</sup> : 150 mW (nominal) Sleep mode: 30 mW (max)
<b>Power Management</b>	ACPI compliant power management 802.11 compliant power saving mode
<b>Receiver Sensitivity<sup>4</sup></b>	54 Mbps: -72 dBm, 11 Mbps: -88 dBm, 1 Mbps: -97 dBm
<b>Antenna Connections</b>	2 U.FL type connectors, 50 ohm nominal impedance
<b>Range</b>	802.11 a – Typical      600 feet – Outdoor Open Area (@6 Mbps)                150 feet – Indoor, Office environment 802.11 b – Typical      1200 feet – Outdoor Open Area (@1 Mbps)                300 feet – Indoor, Office environment 802.11 g – Typical      1200 feet – Outdoor Open Area (@1 Mbps)                300 feet – Indoor, Office environment
<b>Form Factor</b>	PCI-Express MiniCard
<b>Weight</b>	0.013 lb (6 g)
<b>Dimensions</b>	0.19 x 1.2 x 2.0 in (4.75 x 29.85 x 50.8 mm)
<b>Operating Voltage</b>	3.3V +/- 9%, 1.5V +/- 5%
<b>Temperature</b>	Operating                32° to 176° F (0° to 80° C) Non-operating        -40° to 176° F (-40° to 80° C)
<b>Humidity</b>	Operating                10% to 90% (non-condensing) Non-operating        5% to 95% (non-condensing)
<b>Altitude</b>	Operating                0 to 10,000 ft (3,048 m) Non-operating        0 to 50,000 ft (15,240 m)
<b>Configuration Utility<sup>5</sup></b>	Microsoft Windows 2000 or XP



## Technical Specifications

Choice of Configuration Utility:

- Microsoft Windows XP Wireless Network Connection Manager
- Intel PROSet for Microsoft Windows 2000 or XP (required for Cisco Compatible Extensions support)

Microsoft Windows Vista

- Microsoft Windows Vista Wireless Network Connection Manager

### LED Activity

LED Off – Radio OFF; Solid LED On – Radio ON

1. Check latest software/driver release for updates on supported security features.
2. Maximum output power may vary by country according to local regulations.
3. In Power Save Polling mode.
4. Receiver sensitivity is measured at a packet error rate of 8% for 802.11b (CKK modulation) and a packet error rate of 10% for 802.11a/g (OFDM modulation).
5. WLAN supplier's client utility is required for Cisco Compatible Extensions support with Microsoft Windows 2000 or XP. WLAN may also be compatible with certain third-party software suppliers.

### Broadcom 4312G 802.11b/g WiFi Adapter

Wireless LAN Standards	IEEE 802.11b IEEE 802.11g
Interoperability	Wi-Fi certified (802.11abg only) Cisco Compatible Extensions Program compliant (802.11abg only) with Microsoft Windows Vista and XP (details at: <a href="http://www.hp.com/go/notebooks/WLAN">http://www.hp.com/go/notebooks/WLAN</a> ) Tested with wireless access points from several major manufacturers (details at: <a href="http://www.hp.com/go/notebooks/WLAN/draft-n">http://www.hp.com/go/notebooks/WLAN/draft-n</a> )
Frequency Band	2.4 GHz
Data Rates	802.11b: 1, 2, 5.5, 11 Mbps 802.11g: 6, 9, 12, 18, 24, 36, 48, 54 Mbps
Modulation	Direct Sequence Spread Spectrum DBPSK, DQPSK, CCK, OFDM
Security <sup>1</sup>	Supports 64- and 128-bit WEP, WPA, WPA2, hardware-accelerated AES, 802.1x authentication types EAP-TLS, EAP-TTLS, PEAP-GTC, PEAP-MSCHAPv2, LEAP, EAP-FAST.  Support for Cisco Security Features (proven compatibility with Cisco Aironet infrastructure products through the Cisco Compatible Extensions Program Version 4) with Microsoft Windows Vista and XP only.
Sub-channels	Multinational support with frequency bands and channels compliant to local regulations.
Media Access Protocol	CSMA/CA (Collision Avoidance) with ACK
Network Architecture Models	Ad-hoc (Peer to Peer) Infrastructure (Access Point Required)
Roaming	IEEE 802.11 compliant roaming between access points
Output Power (for CCK) <sup>2</sup>	17 dBm

## Technical Specifications

<b>Output Power</b> (for OFDM; 15 dBm power varies by data rate) <sup>2</sup>		
<b>Power Consumption</b>	Idle associated: 250 mW Idle unassociated: 150 mW Transmit: 2.0 W (max) Receive: 2.0 W (max)	
<b>Power Management</b>	ACPI compliant power management 802.11 compliant power saving mode	
<b>Receiver Sensitivity</b> <sup>3</sup>	54 Mbps: -71 dBm, 11 Mbps: -85 dBm , 1 Mbps: -95 dBm	
<b>Antenna type</b>	High efficiency dual band antenna with spatial diversity, mounted in the display enclosure	
<b>Range</b>	802.11 b – Typical (@1 Mbps)	1200 feet – Outdoor Open Area 300 feet – Indoor, Office environment
	802.11 g – Typical (@1 Mbps)	1200 feet – Outdoor Open Area 300 feet – Indoor, Office environment
<b>Form Factor</b>	PCI-Express MiniCard	
<b>Weight</b>	0.026 lb (12 g)	
<b>Dimensions</b>	0.19 x 1.2 x 2.0 in (4.75 x 29.85 x 50.8 mm)	
<b>Operating Voltage</b>	3.3v +/- 10%	
<b>Temperature</b>	Operating Non-operating	14° to 149° F (–10° to 65° C) –40° to 176° F (–40° to 80° C)
<b>Humidity</b>	Operating Non-operating	10% to 90% (non-condensing) 5% to 95% (non-condensing)
<b>Altitude</b>	Operating Non-operating	0 to 10,000 ft (3,048 m) 0 to 50,000 ft (15,240 m)
<b>Configuration Utility</b> <sup>4</sup>	Microsoft Windows XP Choice of Configuration Utility: <ul style="list-style-type: none"> <li>• Microsoft Windows XP Wireless Network Connection Manager</li> <li>• Broadcom Wireless Configuration Utility (required for Cisco Compatible Extensions support)</li> </ul> Microsoft Windows Vista <ul style="list-style-type: none"> <li>• Microsoft Windows Vista Wireless Network Connection Manager</li> <li>• Broadcom IHV extensions for Windows Vista available to support Cisco Compatible Extensions.</li> </ul>	
<b>LED Activity</b>	LED Off – Radio OFF; Solid LED On – Radio ON	

1. Check latest software/driver release for updates on supported security features.
2. Maximum output power may vary by country according to local regulations.
3. Receiver sensitivity is measured at a packet error rate of 8% for 802.11b (CCK modulation) and a packet error rate of 10% for 802.11a/g (OFDM modulation).
4. WLAN supplier's client utility is required for Cisco Compatible Extensions support with Microsoft Windows XP. WLAN may also be compatible with certain third-party software supplicants. WLAN supplier IHV extensions required for Cisco Compatible Extensions support for Microsoft Windows Vista.

## Technical Specifications

HP Integrated Module with Bluetooth Wireless Technology	Bluetooth Specification	2.0 Compliant
	Dimensions	1.02 x 0.55 x 0.22 in (26 x 14 x 5.7 mm)
	Frequency Band	2402 to 2480 MHz
	Number of Available Channels	79 (1 MHz) available channels
	Data Rates and Throughput	3 Mbps data rate; throughput up to 2.17 Mbps
		Synchronous Connection Oriented links up to 3, 64 kbps, voice channels
		Asynchronous Connection Less links 2178.1 kbps/177.1 kbps asymmetric or 1306.9 kbps symmetric
	Transmit Power	-6 dBm to 4 dBm (Bluetooth Class II)
	Receiver Sensitivity	Better than -80 dBm at 0.1 % raw bit error rate
	Power Consumption	Peak (Tx) 264 mW
		Peak (Rx) 231 mW
		Sleep <1 mW
	Antenna	Internally integrated within module
	Range	Up 33 ft (10 m)
	Electrical Interface	USB 2.0 compliant
		Microsoft Windows Plug and Play compliant
	OS Support	Microsoft Windows XP Professional and Home
		Microsoft Windows 2000
	Bluetooth Software Supported	Broadcom Bluetooth for Windows Microsoft Windows XP Bluetooth Software
	Link Topology	Point to Point, Multipoint Pico Nets up to 7 slaves
	Security	Full support of Bluetooth Security Provisions
	Power Management	Microsoft Windows ACPI, and USB Bus Support
		Self configurable to optimize power conservation in all operating modes, including Standby, Hold, Park, and Sniff
Certifications		All necessary regulatory approvals for supported countries, including:
		FCC (47 CFR) Part 15C, Section 15.247 & 15.249
		ETS 300 328, ETS 300 826
		Low Voltage Directive IEC950
Temperature		UL, CSA, and CE Mark
Temperature	Operating	-4° to 158° F (-20° to 70° C)
	Non-operating	-40° to 176° F (-40° to 80° C)
Humidity	Operating	10% to 90%
	Non-operating	5% to 95%
Altitude	Operating	15,000 ft (4,572 m)
	Non-operating	40,000 ft (12,192 m)
Bluetooth Profiles Supported	(with Bluetooth for Windows 4.0 software)	
	Serial Port Profile (SPP)*	

## Technical Specifications

Dial-Up Networking (DUN)\*  
 Generic Object Exchange Profile (GOEP)  
 Object Push Profile (OPP)\*  
 File Transfer Profile (FTP)  
 Synchronization Profile (SYNC)  
 Hard Copy Cable Replacement (HCRP)\*  
 Personal Area Networking Profile (PAN)\*  
 Human Interface Device Profile (HID)\*  
 FAX Profile (FAX)  
 Basic Imaging Profile (BIP)  
 Headset Profile (HSP)  
 Hands Free Profile (HFP)  
 Advanced Audio Distribution Profile (A2DP)

\* indicates the profile is also supported by Microsoft Windows XP SP2

### Eco Data

#### Eco-Label Certifications

This product has received or is in the process of being certified to the following approvals and may be labeled with one or more of these marks:

- US Energy Star
- IT ECO declaration
- EPEAT – GOLD

#### System Configuration

The configuration used for the Energy Consumption and Declared Noise Emissions data for the Convertible Mini tower Desktop model is based on a "Typically Configured Notebook"

Energy Consumption	115 VAC	230 VAC	100 VAC
Normal Operation	10.7W	11.26W	10.8W
Sleep (Energy Star low power mode)	1.14W	1.22W	1.15W
Off	0.74W	0.8W	0.75W
Heat Dissipation*	115 VAC	230 VAC	100 VAC
Normal Operation	37 BTU/hr	39 BTU/hr	37 BTU/hr
Sleep	4 BTU/hr	4 BTU/hr	4 BTU/hr
Off	3 BTU/hr	3 BTU/hr	3 BTU/hr

\* Heat dissipation is calculated based on the measured watts, assuming the service level is attained for one hour.

This product is in compliance with US executive order 13221, WOL (wake on LAN) disabled.

## Technical Specifications

Declared Noise Emissions (in accordance with ISO 7779 and ISO 9296)	Sound Power (LWAd, bels)	Sound Pressure (LpAm, decibels)
System Fan Off		
Idle	3.4	26.8
Fixed Disk (random writes)	3.4	26.7

**NOTE:** System fan is usually off except when charging the battery

### Batteries

This product complies with ISO standards:

- EU Directive 91/ 157/ EEC
- EU Directive 93/ 86/ EEC
- EU Directive 98/ 101/ EEC

Batteries used in the product do not contain:

- Mercury greater the 5ppm by weight
- Cadmium greater than 10ppm by weight
- Lead greater than 4000 ppm by weight.

The battery type and chemistry used in the product is:  
CR2032 (coin cell), Lilon  
High capacity Lithium-Ion battery

### Additional information:

This product is in compliance with the Restrictions of Hazardous Substances (RoHS) directive – 2002/95/EC.

This HP product is designed to comply with the Waste Electrical and Electronic Equipment (WEEE) Directive – 2002/96/EC.

This product is in compliance with California Proposition 65 (State of California; Safe Drinking Water and Toxic Enforcement Act of 1986).

This product is in compliance with the IEEE 1680 (EPEAT) standard at the Gold level, see [www.epeat.net](http://www.epeat.net)

Keyboard complies with ISO standard: ISO 9995, EN 29241-4, and ISO/IEC 15412

Input devices of this product comply with ISO 9241, part 9.

Plastics parts weighing over 25 grams used in the product are marked per ISO 11469 and ISO1043.

This product contains 0% recycled materials (by wt.)

This product is greater than 94.1% recycle-able when properly disposed of at end of life.

Packaging Materials

## Technical Specifications

- External:
  - CANON bags – several layers – 15 g
  - Corrugated carton & Cardboard & misc. – 685 g
- Internal:
  - EPE-Expanded Polyethylene – 80 g
- The CANON bags – several layers packaging material is made from 100% recycled content.
- The Corrugated carton & Cardboard & misc. packaging materials contain 100% recycled content.
- The EPE-Expanded Polyethylene packaging material is made from 100% recycled content.

HP follows these guidelines to decrease the environmental impact of product packaging:

- Eliminate the use of heavy metals such as lead, chromium, mercury and cadmium in packaging materials.
- Eliminate the use of ozone-depleting substances (ODS) in packaging materials.
- Design packaging materials for ease of disassembly.
- Maximize the use of post-consumer recycled content materials in packaging materials.
- Use readily recyclable packaging materials such as paper and corrugated materials.
- Reduce size and weight of packages to improve transportation fuel efficiency.
- Plastic packaging materials are marked according to ISO 11469 and DIN 6120 standards.

### Material Usage

This product does not contain any of the following substances in excess of regulatory limits (for reference of these limits please refer to the HP General Specification of the Environment

([http://www.hp.com/hpinfo/globalcitizenship/environment/supplychain/gen\\_specifications.html](http://www.hp.com/hpinfo/globalcitizenship/environment/supplychain/gen_specifications.html)):

- Asbestos
- Certain Azo Colorants
- Certain Brominated Flame Retardants – may not be used as flame retardants in plastics
- Cadmium
- Chlorinated Hydrocarbons
- Chlorinated Paraffins
- Formaldehyde
- Halogenated Diphenyl Methanes
- Lead carbonates and sulfates
- Lead and Lead compounds
- Mercuric Oxide Batteries
- Nickel – finishes must not be used on the external surface designed to be frequently handled or carried by the user.
- Ozone Depleting Substances
- Polybrominated Biphenyls (PBBs)
- Polybrominated Biphenyl Ethers (PBBEs)

### Technical Specifications

- Polybrominated Biphenyl Oxides (PBBOs)
- Polychlorinated Biphenyl (PCB)
- Polychlorinated Terphenyls (PCT)
- Polyvinyl Chloride (PVC) – except for wires and cables, and certain retail packaging has been voluntarily removed from most applications.
- Radioactive Substances
- Tributyl Tin (TBT), Triphenyl Tin (TPT), Tributyl Tin Oxide (TBTO)

#### End-of-life Management and Recycling

Hewlett-Packard offers end-of-life HP product return and recycling programs in many geographic areas. To recycle your product, please go to: <http://www.hp.com/go/reuse-recycle> or contact your nearest HP sales office. Products returned to HP will be recycled, recovered or disposed of in a responsible manner.

The EU WEEE directive (2002/95/EC) requires manufacturers to provide treatment information for each product type for use by treatment facilities. This information (product disassembly instructions) is posted on the Hewlett Packard web site at: <http://www.hp.com/go/recyclers>. These instructions may be used by recyclers and other WEEE treatment facilities as well as HP OEM customers who integrate and re-sell HP equipment.

#### Hewlett-Packard Corporate Environmental Information

For more information about HP's commitment to the environment:

Global Citizenship Report

<http://www.hp.com/hpinfo/globalcitizenship/gcreport/index.html>

Environment website

<http://www.hp.com/environment>

Eco-label certifications

<http://www.hp.com/hpinfo/globalcitizenship/environment/productdesign/ecolabels.html>

ISO 14001 certificates:

<http://www.hp.com/hpinfo/globalcitizenship/environment/operations/envmanagement.html>

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